

CLAIMS

What is claimed is:

1. A layered heater comprising:
at least one resistive layer comprising a resistive circuit pattern, the resistive circuit pattern defining a length and a thickness,
wherein the thickness varies along the length of the resistive circuit pattern for a variable watt density.
2. The layered heater according to Claim 1, wherein the resistive circuit pattern further comprises a spacing that is constant.
3. The layered heater according to Claim 1, wherein the resistive circuit pattern further comprises a spacing that is variable.
4. The layered heater according to Claim 1, wherein the resistive circuit pattern further comprises a width that is constant.
5. The layered heater according to Claim 1, wherein the resistive circuit pattern further comprises a width that is variable.
6. The layered heater according to Claim 1, wherein the layered heater is selected from a group consisting of thick film, thin film, thermal spray, and sol-gel.
7. The layered heater according to Claim 1, wherein the resistive circuit pattern is selected from a group consisting of series, parallel, and series-parallel.
8. The layered heater according to Claim 1, wherein the variable thickness is continuous.
9. The layered heater according to Claim 1, wherein the variable thickness is non-continuous.

10. A layered heater comprising:
 - at least one resistive layer comprising a resistive circuit pattern, the resistive circuit pattern defining a width,
 - wherein a thickness of the resistive circuit pattern varies across the width of the resistive circuit pattern for a variable watt density.

11. A layered heater comprising:
 - at least one resistive layer comprising a resistive circuit pattern, the resistive circuit pattern comprising a material having a variable composition,
 - wherein the resistive circuit pattern comprises a variable watt density.

12. A layered heater comprising:
 - at least one resistive layer comprising a resistive circuit pattern, the resistive circuit pattern defining a length, a width, and a thickness,
 - wherein the width and the thickness vary along the length of the resistive circuit pattern for a variable watt density.

13. A layered heater comprising:
at least one resistive layer comprising a resistive circuit pattern, the resistive circuit pattern defining a length, a width, a spacing, and a thickness,
wherein the width, spacing, and thickness vary along the length of the resistive circuit pattern for a variable watt density.

14. A layered heater comprising:
 - at least one resistive layer comprising a resistive circuit pattern, the resistive circuit pattern defining a length, a spacing, and a thickness,
 - wherein the spacing and the thickness vary along the length of the resistive circuit pattern for a variable watt density.

15. A layered heater comprising:
 - a dielectric layer;
 - a resistive layer formed on the dielectric layer, the resistive layer comprising a resistive circuit pattern, the resistive circuit pattern defining a length and a thickness; and
 - a protective layer formed on the resistive layer,wherein the thickness of the resistive circuit pattern varies along the length of the resistive circuit pattern for a variable watt density.

16. A layered heater comprising:
- a substrate;
 - a dielectric layer formed on the substrate;
 - a resistive layer formed on the dielectric layer, the resistive layer comprising a resistive circuit pattern, the resistive circuit pattern defining a length and a thickness; and
 - a protective layer formed on the resistive layer,
- wherein the thickness of the resistive circuit pattern varies along the length of the circuit pattern for a variable watt density.

17. A resistive circuit pattern for use in a layered heater, the resistive circuit pattern defining a variable thickness.

18. A layered heater comprising:
at least one resistive layer comprising a resistive circuit pattern, the
resistive circuit defining a variable thickness.
19. The layered heater according to Claim 18 further comprising a plurality
of resistive layers.

20. A method of forming a resistive circuit pattern of a layered heater, the method comprising the steps of:

- (a) dispensing a conductive ink at a rate onto a surface; and
- (b) varying the dispensing rate of the conductive ink to form a variable thickness resistive circuit pattern.

21. A method of forming a resistive circuit pattern of a layered heater, the method comprising the steps of:

- (a) dispensing a conductive ink at a rate onto a surface; and
- (b) varying a feed speed of the substrate relative to the dispensing of conductive ink to form a variable thickness resistive circuit pattern.

22. A method of forming a resistive circuit pattern of a layered heater, the method comprising the steps of:

- (a) dispensing a conductive ink at a rate onto a surface;
- (b) varying the dispensing rate of the conductive ink; and
- (c) varying a feed speed of the substrate relative to the dispensing of conductive ink,

wherein a variable thickness resistive circuit pattern is produced.

23. A method of forming a resistive circuit pattern of a layered heater, the method comprising the steps of:

(a) applying a volume of conductive ink onto a surface to form a trace; and

(b) applying an additional volume of conductive ink onto the trace, wherein a variable thickness resistive circuit pattern is produced.

24. The method according to Claim 23, wherein the volumes of conductive ink are applied by a layered process selected from the group consisting of thick film, thin film, thermal spraying, and sol-gel.

25. The method according to Claim 23, wherein the volumes of conductive ink are applied using precision pen writing equipment.

26. The method according to Claim 23, wherein the volumes of conductive ink are applied using a silk screening process.

27. A layered heater comprising a means for varying the watt density of a resistive circuit pattern.